



# Search Report

EIC 1700

STIC Database Tracking Number: 259437

**To:** KAJ OLSEN  
**Location:** REM-8B79  
**Art Unit:** 1795  
**Friday, May 02, 2008**

**Case Serial Number:** 10/621637

**From:** KENDRA BANKS  
**Location:** EIC1700  
**REM-4B28 / REM-4A28**  
**Phone:** (571)272-2516

**kendra.banks@uspto.gov**

## Search Notes

Examiner OLSEN:

No Cases Reported

US 5,650,054



## Current session 02/05/2008

(C) QUESTEL 1994  
 QUESTEL ORBIT (TM) 1998  
 Last connection: 17/04/08 22\*12\*39

02/05/08 20\*50\*37

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## Query/Command : FILE PLUSPAT

QUESTEL - Time in minutes : 1,30  
 The cost estimation below is based on Questel's  
 standard price list

Estimated cost : 1.56 USD  
 Cost estimated for the last database search : 1.56 USD  
 Estimated total session cost : 1.56 USD

Selected file: PLUSPAT

PLUSPAT - (c) Questel, All Rights Reserved.  
 RELOADED 02/2008 Comprehensive Worldwide Patents database  
 Individual records for each Country or Patent Office  
 Coverage: 78 patenting authorities; start dates vary from 1800 forward  
 Abstracts/Titles in English, French & German. Increased standardization  
 of Assignee/Inventor names. Added cited ref's BE, CH, NL, IT, FR, AU, & JPB  
 For PlusPat Fact Sheet, Pricing and FAQ, see the Questel website  
 Last update of file: 2008/04/25 (YYYY/MM/DD) 2008-17//00P (last update)

Search statement 1

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## Query/Command : US5650054.PRN

## \*\* SS 1: Results 1

Search statement 2

?

## Query/Command : PRT FULL NONSTOP LEGAL/ALL

1/1 PLUSPAT - Questel - image

PN - US5650054 A 19970722 [US5650054]

TI -

(A) Low cost room temperature electrochemical carbon monoxide and toxic gas

sensor with humidity compensation based on protonic conductive membranes

**PA** - (A) ATWOOD IND INC (US)

**PA0** - Atwood Industries, Inc., Rockford IL [US]

**IN** - (A) SHEN YOUSHENG (US); CONSADORI FRANCO (US); FIELD D GEORGE (US)

**AP** - US52294695 19950901 [1995US-0522946]

**FD** - C.I.P. of US381718 19950131 [1995US-0381718]  
Continuation-in-part of: US5573648

**PR** - US52294695 19950901 [1995US-0522946]  
US38171895 19950131 [1995US-0381718]

**IC** - (A) G01N-027/407

**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP];  
G01N-033/00 [2006-01 A - I R M EP]

**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]

**EC** - G01N-027/407C2  
G01N-027/49B1  
G01N-033/00D2D4C

**PCL** - ORIGINAL (O) : 204412000; CROSS-REFERENCE (X) : 204421000  
204424000 205781000 205783500 205784000 205786500 205788000

**DT** - Corresponding document

**CT** - US3366559 [US3366559] 205742000  
-US4024036 [US4024036] 204427000  
-US4025412 [US4025412] 204195000  
-US4227984 [US4227984] 204430000  
-US4324632 [US4324632] 204195000  
-US4474648 [US4474648] 204001000  
-US4478704 [US4478704] 204412000  
-US4536274 [US4536274] 204433000  
-US4664757 [US4664757] 204426000  
-US5080775 [US5080775] 204421000  
-US5118398 [US5118398] 204153100  
-US5126035 [US5126035] 204415000  
-US5133857 [US5133857] 204425000  
-US5164053 [US5164053] 204153180  
-US5173166 [US5173166] 204412000  
-US5228974 [US5228974] 204415000  
-US5302274 [US5302274] 204412000  
-US5344546 [US5344546] 204415000

Sung B. Lee, Anthony Cocco, Dariush Keyvani and G. Jordan Maclay,  
Humidity Dependence of Carbon Monoxide Oxidation Rate in a Nafion-Based  
Electrochemical Cell, vol. 142, No. 1, Jan. 1995.

- Mahlon S. Wilson, Fernando H. Garzon, Kurt E. Sickafus, and Shimshon  
Gottesfeld, Surface Area Loss of Supported Platinum in Polymer Electrolyte  
Fuel Cells, vol. 140, No. 10, Oct. 1993.

**STG** - (A) United States patent

**AB** - A low cost room temperature electrochemical gas sensor with humidity

compensation for sensing CO, alcohol vapors and other toxic analyte gases has a solid protonic conductive membrane with a low bulk ionic resistance. A sensing electrode and a counter electrode, optionally a counter electrode and a reference electrode, which are separated by the membrane, can be made of mixed protonic-electronic conductors, or can be made of a thin electrically conducting film such as platinum. A reservoir of water maintain the solid protonic conductive membrane at constant 100 percent relative humidity to compensate for ambient humidity changes. Embodiments of the inventive sensor also include an electrochemical analyte gas pump to transport the analyte gas away from the counter electrode side of the sensor. Analyte gas pumps for the inventive sensor include dual pumping electrodes situated on opposite sides of the membrane, and include a means for applying a DC power across the membrane to the sensing and counter electrodes. Another embodiment of the inventive sensor has first and second solid protonic conductive membranes, one of which has a sensing electrode and a counter electrode separated by the first membrane, and the other of which has dual pump electrodes situated on opposite sides of the second membrane.

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1/1 *LCST - OERO*

**PN** - US5650054 A 19970722 [US5650054]

**AP** - US52294695 19950901 [1995US-0522946]

**ACT** - 19960730 US/AS02-A

ASSIGNMENT OF ASSIGNOR'S INTEREST

OWNER: ATWOOD INDUSTRIES, INC. 4750 HIAWATHA DRIVE  
ROCKFO; EFFECTIVE DATE: 19950908

19960730 US/AS02-A

ASSIGNMENT OF ASSIGNOR'S INTEREST

OWNER: SHEN, YOUSHEUNG; EFFECTIVE DATE: 19950908

19960730 US/AS02-A

ASSIGNMENT OF ASSIGNOR'S INTEREST

OWNER: CONSADORI, FRANCO; EFFECTIVE DATE: 19950908

19981027 US/CC-A

CERTIFICATE OF CORRECTION

20020402 US/RR-A [+]

REQUEST FOR REEXAMINATION FILED

EFFECTIVE DATE: 20020129

20030707 US/AS-A

ASSIGNMENT

OWNER: ATWOOD MOBILE PRODUCTS, INC. 4750 HIAWATHA  
DRIVERO; EFFECTIVE DATE: 20030626

CONFIRMATORY ASSIGNMENT;ASSIGNOR:DURA OPERATING  
CORP.;REEL/FRAME:014242/0122

20031111 US/RF-A

REISSUE APPLICATION FILED  
EFFECTIVE DATE: 20030717

20050630 US/AS-A  
ASSIGNMENT  
OWNER: ANDERSON INDUSTRIES, INC., MICHIGAN; EFFECTIVE DATE:  
20000203  
MERGER;ASSIGNOR:ATWOOD INDUSTRIES,  
INC.;REEL/FRAME:016206/0187

20050630 US/AS-A  
ASSIGNMENT  
OWNER: DURA OPERATING CORP., MICHIGAN; EFFECTIVE DATE:  
20000203  
MERGER;ASSIGNOR:ANDERSON INDUSTRIES,  
INC.;REEL/FRAME:016206/0235

20050718 US/AS-A  
ASSIGNMENT  
OWNER: BANK OF AMERICA, N.A., AS COLLATERAL AGENT, WISCON;  
EFFECTIVE DATE: 20050713  
SECURITY INTEREST;ASSIGNOR:DURA OPERATING  
CORP.;REEL/FRAME:016283/0560

20050809 US/AS-A  
ASSIGNMENT  
OWNER: WILMINGTON TRUST COMPANY, AS COLLATERAL AGENT,  
DEL; EFFECTIVE DATE: 20050628  
SECURITY AGREEMENT;ASSIGNOR:DURA OPERATING  
CORP.;REEL/FRAME:016369/0695

UP - 2006-43

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1/11 CXXX - CLAIMS RRRX

PN - 5,650,054 A 19970722 [US5650054]  
PA - Atwood Industries Inc  
ACT - 20020129 REEXAMINATION REQUESTED  
ISSUE DATE OF O.G.: 20020402  
REEXAMINATION REQUEST NUMBER: 90/006209  
Figaro Engineering, Osaka, Japan, c/o Arent, Fox, Plotkin & Kahn, Attn: Robert  
B. Murray, Washington, DC

20030717 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20031111  
REISSUE REQUEST NUMBER: 10/621637  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 1753

Reissue Patent Number:

20050630 REASSIGNED  
MERGER

Assignor: ANDERSON INDUSTRIES, INC., DATE SIGNED: 02/03/2000

Assignee: DURA OPERATING CORP., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309

Reel 016206/Frame 0235

Contact: RENEE PRESCAN, 200 E. RANDOLPH DRIVE, KIRKLAND &  
ELLIS LLP, CHICAGO, IL 60601

20050630 REASSIGNED  
MERGER

Assignor: ATWOOD INDUSTRIES, INC., DATE SIGNED: 02/03/2000

Assignee: ANDERSON INDUSTRIES, INC., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309

Reel 016206/Frame 0187

Contact: RENEE PRESCAN, 200 E. RANDOLPH DRIVE, KIRKLAND &  
ELLIS LLP, CHICAGO, IL 60601

20050718 REASSIGNED  
SECURITY INTEREST

Assignor: DURA OPERATING CORP., DATE SIGNED: 07/13/2005

Assignee: BANK OF AMERICA, N.A., AS COLLATERAL AGENT, 20800  
SWENSON DRIVE, WAUKESHA, WISCONSIN, 53187

Reel 016283/Frame 0560

Contact: LINDA R. KASTNER, C/O LATHAM & WATKINS, SUITE 5800,  
233 S. WACKER DRIVE, CHICAGO, IL 60606

20050809 REASSIGNED  
SECURITY AGREEMENT

Assignor: DURA OPERATING CORP., DATE SIGNED: 06/28/2005

Assignee: WILMINGTON TRUST COMPANY, AS COLLATERAL AGENT,  
RODNEY SQUARE NORTH, 1100 NORTH MARKET STREET,  
WILMINGTON, DELAWARE, 19890

Reel 016369/Frame 0695

Contact: ROBYN RAHBAR, ESQ., SIMPSON THACHER & BARTLETT LLP,  
425 LEXINGTON AVENUE, NEW YORK, NY 10017

**20070828 REASSIGNED  
SECURITY AGREEMENT**

Assignor: ATWOOD MOBILE PRODUCTS LLC, DATE SIGNED: 08/27/2007

Assignee: MERRILL LYNCH CAPITAL, A DIVISION OF MERRILL LYNCH  
BUSINESS FINANCIAL SERVICES, INC., 222 NORTH LASALLE STREET,  
CHICAGO, ILLINOIS, 60601

Reel 019754/Frame 0247

Contact: KATTEN MUCHIN ROSENMAN, 525 WEST MONROE STREET,  
CHICAGO, IL 60661

**20080208 REASSIGNED  
TERMINATION AND RELEASE**

Assignor: GOLDMAN SACHS CREDIT PARTNERS, L.P., AS COLLATERAL  
AGENT, DATE SIGNED: 01/30/2008

Assignee: DURA OPERATING CORP., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309-3575  
UNIVERSAL TOOL & STAMPING COMPANY, INC., 2791 RESEARCH  
DRIVE, ROCHESTER HILLS, MICHIGAN, 48309-3575  
DURA AUTOMOTIVE SYSTEMS CABLE OPERATIONS, INC., 2791  
RESEARCH DRIVE, ROCHESTER HILLS, MICHIGAN, 48309-3575  
DURA GLOBAL TECHNOLOGIES, INC., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309-3575  
ATWOOD MOBILE PRODUCTS, INC., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309-3575  
DURA AUTOMOTIVE SYSTEMS, INC., 2791 RESEARCH DRIVE,  
ROCHESTER HILLS, MICHIGAN, 48309-3575

Reel 020478/Frame 0674

Contact: WATT WANAPHA, ESQ., 919 THIRD AVENUE, 19TH FLOOR,  
NEW YORK, NY 10022

Search statement 2

**Query/Command : FILE INPADMIN**

LGST - Time in minutes : 0,01  
 The cost estimation below is based on Questel's  
 standard price list

Estimated cost :	0.01 USD
Records displayed and billed :	1
Estimated cost :	0.70 USD
Cost estimated for the last database search :	0.71 USD
Estimated total session cost :	2.27 USD

CRXX - Time in minutes : 0,02  
 The cost estimation below is based on Questel's  
 standard price list

Estimated cost :	0.04 USD
Records displayed and billed :	1
Estimated cost :	6.30 USD
Cost estimated for the last database search :	6.34 USD
Estimated total session cost :	8.61 USD

LITA - Time in minutes : 0,00  
 The cost estimation below is based on Questel's  
 standard price list

Estimated total session cost :	8.61 USD
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PLUSPAT - Time in minutes : 0,79  
 The cost estimation below is based on Questel's  
 standard price list

Estimated cost :	2.43 USD
Records displayed and billed :	1
Estimated cost :	1.70 USD
Cost estimated for the last database search :	4.13 USD
Estimated total session cost :	12.74 USD

Selected file: PLUSPAT

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 RELOADED 02/2008 Comprehensive Worldwide Patents database  
 Individual records for each Country or Patent Office  
 Coverage: 78 patenting authorities; start dates vary from 1800 forward  
 Abstracts/Titles in English, French & German. Increased standardization  
 of Assignee/inventor names. Added cited ref's BE, CH, NL, FR, DE, AU, & JP  
 For PlusPat Fact Sheet, Pricing and FAQ, see the Questel website  
 Last update of file: 2008/04/25 (YYYY/MM/DD) 2008-117/JP (Last update)

Search statement 2

?

**Query/Command : FAM US5611000B1**

## 1 Patent Groups

## \*\* SS 2: Results 7

Search statement 3

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Query/Command : FAMSTATE NONSTOP

## 1/7 PLUSPAT - Questel

**PN** - AU4971296 A 19960821 [AU9649712]  
**STG** - (A) Open to public inspection  
**TI** - (A) Electrochemical gas sensor  
**PA** - (A) ATWOOD IND INC  
**IN** - (A) SHEN YOUSHENG; CONSADORI FRANCO; FIELD D GEORGE  
**IC** - (A) G01N-027/407  
**AP** - AU4971296 19960130 [1996AU-0049712]  
**PR** - US38171895 19950131 [1995US-0381718]  
           WOUS9601441 19960130 [1996WO-US01441]  
**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP];  
           G01N-033/00 [2006-01 A - I R M EP]  
**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-  
           033/00 [2006 C - I R M EP]  
**EC** - G01N-027/407C2  
           G01N-027/49B1  
           G01N-033/00D2D4C  
**DT** - Corresponding document

## 2/7 PLUSPAT - Questel

**PN** - DE69624885 D1 20030102 [DE69624885]  
**STG** - (D1) Granted EP number in bulletin  
**OTI** - (D1) Fühler für Kohlenstoffmonoxyd und toxische Gase mit  
           Feuchtigkeitskompensation mit Hilfe von protonenleitenden Membranen und  
           dessen Herstellungsverfahren  
**PA** - (D1) WALTER KIDDE PORTABLE EQUIPMEN (US)  
**IN** - (D1) SHEN YOUSHENG (US); FIELD GEORGE D (US); CONSADORI  
           FRANCO (US)  
**IC** - (D1) G01N-027/407 G01N-027/417 G01N-027/49  
**PN2** - DE69624885 T2 20030828 [DE69624885]  
**STG2** - (T2) Trans. Of EP patent  
**OTI2** - (T2) Fühler für Kohlenstoffmonoxyd und toxische Gase mit  
           Feuchtigkeitskompensation mit Hilfe von protonenleitenden Membranen und  
           dessen Herstellungsverfahren

**PA2** - (T2) WALTER KIDDE PORTABLE EQUIPMEN (US)  
**IN2** - (T2) SHEN YOUSHENG (US); FIELD GEORGE D (US); CONSADORI FRANCO (US)  
**IC2** - (T2) G01N-027/407 G01N-027/417 G01N-027/49  
**AP** - DE69624885T 19960830 [1996DE-6024885]  
**PR** - US52294695 19950901 [1995US-0522946]  
**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP]; G01N-033/00 [2006-01 A - I R M EP]  
**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]  
**EC** - G01N-027/407C2  
   G01N-027/49B1  
   G01N-033/00D2D4C  
**DT** - Corresponding document  
**UP** - 2003-01

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**1/1 LEGALI - @EPO**

**PN** - DE69624885 D1 20030102 [DE69624885]DE69624885 T2 20030828 [DE69624885]  
**AP** - DE69624885 19960830 [1996DE-6024885]  
**ACTE** - 20031120 DE/8363-A [-]  
   OPPOSITION AGAINST THE PATENT  
**UP** - 2003-47

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**3/7 PLUSPAT - ©Questel - image**

**PN** - EP0762117 A2 19970312 [EP-762117]  
**STG** - (A2) Pub. Of applic. Without search report  
**TI** - (A2) Carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes and method of fabrication  
**OTI** - (A2) Fühler für Kohlenstoffmonoxyd und toxische Gase mit Feuchtigkeitskompensation mit Hilfe von protonenleitenden Membranen und dessen Herstellungsverfahren  
   (A2) Capteur de monoxyde de carbone et de gaz toxiques avec compensation de l'humidité basé sur des membranes conductrices de protons ainsi que son procédé de fabrication  
**PA** - (A2) ATWOOD IND INC (US)  
**PA0** - ATWOOD INDUSTRIES INC.; 4750 Hiawatha Drive; Rockford, Illinois 61103-1298 (US)  
**IN** - (A2) SHEN YOUSHENG (US); FIELD GEORGE D (US); CONSADORI FRANCO (US)  
**IC** - (A2) G01N-027/49  
**PN2** - EP0762117 A3 19980610 [EP-762117]  
**STG2** - (A3) Publi. Of search report

**TI2** - (A3) Carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes and method of fabrication

**OTI2** - (A3) Fühler für Kohlenstoffmonoxyd und toxische Gase mit Feuchtigkeitskompensation mit Hilfe von protonenleitenden Membranen und dessen Herstellungsverfahren  
(A3) Capteur de monoxyde de carbone et de gaz toxiques avec compensation de l'humidité basé sur des membranes conductrices de protons ainsi que son procédé de fabrication

**PA2** - (A3) ATWOOD IND INC (US)

**IN2** - (A3) SHEN YOUSHENG (US); FIELD GEORGE D (US); CONSADORI FRANCO (US)

**IC2** - (A3) G01N-027/49

**PN3** - EP0762117 B1 20021120 [EP-762117]

**STG3** - (B1) Patent

**TI3** - (B1) Carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes and method of fabrication

**OTI3** - (B1) Fühler für Kohlenstoffmonoxyd und toxische Gase mit Feuchtigkeitskompensation mit Hilfe von protonenleitenden Membranen und dessen Herstellungsverfahren  
(B1) Capteur de monoxyde de carbone et de gaz toxiques avec compensation de l'humidité basé sur des membranes conductrices de protons ainsi que son procédé de fabrication

**PA3** - (B1) WALTER KIDDE PORTABLE EQUIPMEN (US)

**IN3** - (B1) SHEN YOUSHENG (US); FIELD GEORGE D (US); CONSADORI FRANCO (US)

**IC3** - (B1) G01N-027/407 G01N-027/417 G01N-027/49

**LA** - ENGLISH (ENG)

**AP** - EP96306317 19960830 [1996EP-0306317]

**PR** - US52294695 19950901 [1995US-0522946]

**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP]; G01N-033/00 [2006-01 A - I R M EP]

**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]

**EC** - G01N-027/407C2  
G01N-027/49B1  
G01N-033/00D2D4C

**DS** - DE FR GB IT

**DT** - Basic

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**1/1 LEGALI - CEPQ**

**PN** - EP0762117 A2 19970312 [EP-762117]EP0762117 A3 19980610 [EP-762117]  
EP0762117 B1 20021120 [EP-762117]

**AP** - EP96306317 19960830 [1996EP-0306317]

**ACTE** - 19970312 EP/AK-A [+]  
DESIGNATED CONTRACTING STATES:

DE FR GB IT

19980610 EP/AK-A [+]  
DESIGNATED CONTRACTING STATES:  
DE FR GB IT

19990120 EP/17P-A [+]  
REQUEST FOR EXAMINATION FILED  
EFFECTIVE DATE: 19981125

19990512 EP/17Q-A [+]  
FIRST EXAMINATION REPORT  
EFFECTIVE DATE: 19990325

20020703 EP/RAP1-A  
APPLICANT REASSIGNMENT (CORRECTION)  
OWNER: WALTER KIDDE PORTABLE EQUIPMENT INC.

20021120 EP/AK-A [+]  
DESIGNATED CONTRACTING STATES:  
DE FR GB IT

20021120 EP/REG-A; GB/FG4D [+]  
GB: EUROPEAN PATENT GRANTED  
<GB>

20030102 EP/REF-A  
CORRESPONDS TO:  
(DE 69624885 20030102 [DE69624885])

20030627 EP/ET-A [+]  
FR: TRANSLATION FILED

20031015 EP/26-A [-]  
OPPOSITION FILED  
OPPONENT: FIGARO ENGINEERING INC; EFFECTIVE DATE: 20030813

20060808 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<FR>  
PAYMENT DATE: 20060808; PAYMENT YEAR: 11

20060830 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<GB>  
PAYMENT DATE: 20060830; PAYMENT YEAR: 11

20060831 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<IT>  
PAYMENT DATE: 20060831; PAYMENT YEAR: 11

20070502 EP/27C-A [+]  
TERMINATION OF OPPOSITION PROCEDURE  
EFFECTIVE DATE: 20070227

20070823 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<DE>  
PAYMENT DATE: 20070823; PAYMENT YEAR: 12

20080102 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<GB>  
PAYMENT DATE: 20070829; PAYMENT YEAR: 12

20080131 EP/PGFP-A [+]  
POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE  
<IT>  
PAYMENT DATE: 20070828; PAYMENT YEAR: 12

UP - 2008-09

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4//7 PLUSPAT - ©Questel

PN - EP0807249 A1 19971119 [EP-807249]  
STG - (A1) Public. Of applic. With search report  
TI - (A1) ELECTROCHEMICAL GAS SENSOR  
OTI - (A1) ELEKTROCHEMISCHER GASSENSOR  
(A1) CAPTEUR DE GAZ ELECTROCHIMIQUE  
PA - (A1) ATWOOD IND INC (US)  
PA0 - ATWOOD INDUSTRIES INC.; 4750 Hiawatha Drive; Rockford, Illinois 61103-1298 (US)  
IN - (A1) SHEN YOUSHENG (US); CONSADORI FRANCO (US); FIELD D GEORGE (US)  
IC - (A1) G01N-027/407  
PN2 - EP0807249 A4 19980520 [EP-807249]  
STG2 - (A4) Publ. Of suppl. search report  
TI2 - (A4) ELECTROCHEMICAL GAS SENSOR  
OTI2 - (A4) ELEKTROCHEMISCHER GASSENSOR  
(A4) CAPTEUR DE GAZ ELECTROCHIMIQUE  
PA2 - (A4) ATWOOD IND INC (US)  
IN2 - (A4) SHEN YOUSHENG (US); CONSADORI FRANCO (US); FIELD D GEORGE (US)  
IC2 - (A4) G01N-027/407  
LA - ENGLISH (ENG)  
AP - EP96906275 19960130 [1996EP-0906275]  
PR - WOUS9601441 19960130 [1996WO-US01441]

US38171895 19950131 [1995US-0381718]  
**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP];  
 G01N-033/00 [2006-01 A - I R M EP]  
**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]  
**EC** - G01N-027/407C2  
 G01N-027/49B1  
 G01N-033/00D2D4C  
**DS** - DE FR GB IT  
**DT** - Corresponding document

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**1/11 LEGAL - OEP0**

**PN** - EP0807249 A1 19971119 [EP-807249]EP0807249 A4 19980520 [EP-807249]

**AP** - EP96906275 19960130 [1996EP-0906275]

**ACTE** - 19971119 EP/AK-A [+]  
 DESIGNATED CONTRACTING STATES:  
 DE FR GB IT

19971119 EP/17P-A [+]  
 REQUEST FOR EXAMINATION FILED  
 EFFECTIVE DATE: 19970804

19980520 EP/AK-A [+]  
 DESIGNATED CONTRACTING STATES:  
 DE FR GB IT

19980520 EP/A4-A [+]  
 SUPPLEMENTARY SEARCH REPORT  
 EFFECTIVE DATE: 19980331

19980902 EP/17Q-A [+]  
 FIRST EXAMINATION REPORT  
 EFFECTIVE DATE: 19980717

20001129 EP/18D-A [-]  
 DEEMED TO BE WITHDRAWN  
 EFFECTIVE DATE: 20000407

**UP** - 2003-22

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**5/17 PLUSPATM - Questel - image**

**PN** - US5573648 A 19961112 [US5573648]

**STG** - (A) United States patent

**TI** - (A) Gas sensor based on protonic conductive membranes

**PA** - (A) ATWOOD SYSTEMS AND CONTROLS (US)

**PA0** - Atwood Systems and Controls, Salt Lake City UT [US]

**IN** - (A) SHEN YOUSHENG (US); CONSADORI FRANCO (US); FIELD D

GEORGE (US)  
**IC** - (A) G01N-027/407  
**AP** - US38171895 19950131 [1995US-0381718]  
**PR** - US38171895 19950131 [1995US-0381718]  
**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP]; G01N-033/00 [2006-01 A - I R M EP]  
**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]  
**EC** - G01N-027/407C2  
G01N-027/49B1  
G01N-033/00D2D4C  
**PCL** - ORIGINAL (O) : 204412000; CROSS-REFERENCE (X) : 204421000  
204424000 204425000 204426000 205781000 205783500 205784000  
205786500 205788000  
**DT** - Corresponding document

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***1/11 LEGALI - OERO***

**PN** - US5573648 A 19961112 [US5573648]  
**AP** - US38171895 19950131 [1995US-0381718]  
**ACTE** -  
19950131 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: ATWOOD INDUSTRIES, INC. 4750 HIAWATHA DRIVE  
ROCKFO; EFFECTIVE DATE: 19950131  
  
19950131 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: SHEN, YOUSHENG; EFFECTIVE DATE: 19950131  
  
19950131 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: CONSADORI, FRANCO; EFFECTIVE DATE: 19950131  
  
19950131 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: FIELD, D. GEORGE; EFFECTIVE DATE: 19950131  
  
20020402 US/RR-A [+]  
REQUEST FOR REEXAMINATION FILED  
EFFECTIVE DATE: 20020129  
  
20030707 US/AS-A  
ASSIGNMENT  
OWNER: ATWOOD MOBILE PRODUCTS, INC. 4750 HIAWATHA  
DRIVERO; EFFECTIVE DATE: 20030626  
CONFIRMATORY ASSIGNMENT;ASSIGNOR:DURA OPERATING  
CORP.;REEL/FRAME:014242/0122

20040706 US/RF-A  
REISSUE APPLICATION FILED  
EFFECTIVE DATE: 20030717

20050630 US/AS-A  
ASSIGNMENT  
OWNER: ANDERSON INDUSTRIES, INC., MICHIGAN; EFFECTIVE  
DATE: 20000203  
MERGER;ASSIGNOR:ATWOOD INDUSTRIES,  
INC.;REEL/FRAME:016206/0187

20050630 US/AS-A  
ASSIGNMENT  
OWNER: DURA OPERATING CORP., MICHIGAN; EFFECTIVE DATE:  
20000203  
MERGER;ASSIGNOR:ANDERSON INDUSTRIES,  
INC.;REEL/FRAME:016206/0235

20050809 US/AS-A  
ASSIGNMENT  
OWNER: WILMINGTON TRUST COMPANY, AS COLLATERAL AGENT,  
DEL; EFFECTIVE DATE: 20050628  
SECURITY AGREEMENT;ASSIGNOR:ATWOOD MOBILE PRODUCTS,  
INC.;REEL/FRAME:016369/0626

20080101 US/B1-A [+]  
REEXAMINATION CERTIFICATE FIRST REEXAMINATION  
THE PATENTABILITY OF CLAIMS 2, 17-74 AND 76-78 IS CONFIRMED.  
CLAIMS 1,3456 AND 75 ARE CANCELLED.

UP - 2008-03

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6/7 PLUSPAT - Questel - image

PN - US5650054 A 19970722 [US5650054]  
STG - (A) United States patent  
TI - (A) Low cost room temperature electrochemical carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes  
PA - (A) ATWOOD IND INC (US)  
PA0 - Atwood Industries, Inc., Rockford IL [US]  
IN - (A) SHEN YOUSHENG (US); CONSADORI FRANCO (US); FIELD D GEORGE (US)  
IC - (A) G01N-027/407  
AP - US52294695 19950901 [1995US-0522946]  
PR - US52294695 19950901 [1995US-0522946]  
US38171895 19950131 [1995US-0381718]  
ICAA - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP];  
G01N-033/00 [2006-01 A - I R M EP]  
ICCA - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-

033/00 [2006 C - I R M EP]

**EC** - G01N-027/407C2  
G01N-027/49B1  
G01N-033/00D2D4C

**PCL** - ORIGINAL (O) : 204412000; CROSS-REFERENCE (X) : 204421000  
204424000 205781000 205783500 205784000 205786500 205788000

**DT** - Corresponding document

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*1/1 LEGALI - ©EPO*

**PN** - US5650054 A 19970722 [US5650054]  
**AP** - US52294695 19950901 [1995US-0522946]

**ACTE** -  
19960730 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: ATWOOD INDUSTRIES, INC. 4750 HIAWATHA DRIVE  
ROCKFO; EFFECTIVE DATE: 19950908

19960730 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: SHEN, YOUSHENG; EFFECTIVE DATE: 19950908

19960730 US/AS02-A  
ASSIGNMENT OF ASSIGNOR'S INTEREST  
OWNER: CONSADORI, FRANCO; EFFECTIVE DATE: 19950908

19981027 US/CC-A  
CERTIFICATE OF CORRECTION

20020402 US/RR-A [+]  
REQUEST FOR REEXAMINATION FILED  
EFFECTIVE DATE: 20020129

20030707 US/AS-A  
ASSIGNMENT  
OWNER: ATWOOD MOBILE PRODUCTS, INC. 4750 HIAWATHA  
DRIVERO; EFFECTIVE DATE: 20030626  
CONFIRMATORY ASSIGNMENT;ASSIGNOR:DURA OPERATING  
CORP.;REEL/FRAME:014242/0122

20031111 US/RF-A  
REISSUE APPLICATION FILED  
EFFECTIVE DATE: 20030717

20050630 US/AS-A  
ASSIGNMENT  
OWNER: ANDERSON INDUSTRIES, INC., MICHIGAN; EFFECTIVE  
DATE: 20000203  
MERGER;ASSIGNOR:ATWOOD INDUSTRIES,  
INC.;REEL/FRAME:016206/0187

20050630 US/AS-A

ASSIGNMENT

OWNER: DURA OPERATING CORP., MICHIGAN; EFFECTIVE DATE: 20000203

MERGER;ASSIGNOR:ANDERSON INDUSTRIES, INC.;REEL/FRAME:016206/0235

20050718 US/AS-A

ASSIGNMENT

OWNER: BANK OF AMERICA, N.A., AS COLLATERAL AGENT, WISCON; EFFECTIVE DATE: 20050713

SECURITY INTEREST;ASSIGNOR:DURA OPERATING CORP.;REEL/FRAME:016283/0560

20050809 US/AS-A

ASSIGNMENT

OWNER: WILMINGTON TRUST COMPANY, AS COLLATERAL AGENT, DEL; EFFECTIVE DATE: 20050628

SECURITY AGREEMENT;ASSIGNOR:DURA OPERATING CORP.;REEL/FRAME:016369/0695

UP - 2006-43

7/17 PLUSPAT - Questel - image

**PN** - WO9624052 A1 19960808 [WO9624052]

**STG** - (A1) Publ. Of int. Appl. With int. Search rep

**TI** - (A1) ELECTROCHEMICAL GAS SENSOR

**OTI** - (A1) CAPTEUR DE GAZ ELECTROCHIMIQUE

**PA** - (A1) ATWOOD IND INC (US)

**PA0** - ATWOOD INDUSTRIES, INC. ; 4750 Hiawatha Drive Rockwood, IL 61103-1298 (US)

**IN** - (A1) SHEN YOUSHENG; CONSADORI FRANCO; FIELD D GEORGE

**IC** - (A1) G01N-027/407

**LA** - ENGLISH (ENG)

**AP** - WOUS9601441 19960130 [1996WO-US01441]

**PR** - US38171895 19950131 [1995US-0381718]

**ICAA** - G01N-027/407 [2006-01 A - I R M EP]; G01N-027/49 [2006-01 A - I R M EP]; G01N-033/00 [2006-01 A - I R M EP]

**ICCA** - G01N-027/407 [2006 C - I R M EP]; G01N-027/49 [2006 C - I R M EP]; G01N-033/00 [2006 C - I R M EP]

**EC** - G01N-027/407C2

G01N-027/49B1

G01N-033/00D2D4C

**DS** - AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN AZ BY

KG KZ RU TJ TM

ARIPO patent : KE LS MW SD SZ UG

European patent : AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

OAPI patent : BF BJ CF CG CI CM GA GN ML MR NE SN

DT - Basic

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**1/11 LEGALI - @EPO**

PN - WO9624052 A1 19960808 [WO9624052]

AP - WOUS9601441 19960130 [1996WO-US01441]

ACTE - 19960808 WO/AK [+]

DESIGNATED STATES CITED IN A PUBLISHED APPLICATION WITH  
SEARCH REPORT

AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE  
HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX  
NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN AZ BY  
KG KZ RU TJ TM

**19960808 WO/AL [+]**

DESIGNATED COUNTRIES FOR REGIONAL PATENTS CITED IN A  
PUBLISHED APPLICATION WITH SEARCH REPORT

KE LS MW SD SZ UG AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT  
SE BF BJ CF CG CI CM GA GN ML MR NE SN

**19961024 WO/COOP**

CORRECTED VERSION OF PAMPHLET

PAGE 8, DESCRIPTION, REPLACED BY A NEW PAGE BEARING THE  
SAME NUMBER; DUE TO LATE TRANSMITTAL BY THERECEIVING  
OFFICE

**19961106 WO/1221**

EP: THE EPO HAS BEEN INFORMED BY WIPO THAT EP WAS  
DESIGNATED IN THIS APPLICATION

**19961107 WO/DPPE**

REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO  
EXPIRATION OF 19TH MONTH FROM PRIORITY DATE

19971204 WO/REG; DE/8642 [-]

DE: IMPACT ABOLISHED FOR DE  
<DE>

UP - 2003-22

Search statement 3

PATNO IS 5650054

DATE:: MAY 2, 2008  
LIBRARY: PATENT  
FILE:: ALL

Your search request is:  
PATNO IS 5650054

Number of PATENTS found with your search request through:  
LEVEL 1... 1

Your search request has found 1 PATENT through Level 1.  
To DISPLAY this PATENT press either the KWIC, FULL, CITE or SEGMENT key.  
To MODIFY your search request, press the M key (for MODEM) and then the ENTER key.

For further explanation, press the H key (for HELP) and then the ENTER key.

1. 5650054 , July 22, 1997 , Low cost room temperature electrochemical carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes, Shem, Yousheng - Salt Lake City, Utah, United States (US); Consadori, Franco - Salt Lake City, Utah, United States (US); Field, D. George - Pleasant Grove, Utah, United States (US), 522946 (08), July 30, 1996 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., ATWOOD INDUSTRIES, INC. 4750 HIAWATHA DRIVE ROCKFORD, ILLINOIS, 61103, Reel and Frame Number: 008057/00813, Atwood Industries, Inc., Rockford, Illinois, United States (US), United States company or corporation (02), July 7, 2003 - CONFIRMATORY ASSIGNMENT, ATWOOD MOBILE PRODUCTS, INC. 4750 HIAWATHA DRIVE ROCKFORD, ILLINOIS, 61103, Reel and Frame Number: 014242/00222 June 30, 2005 - MERGER (SEE DOCUMENT FOR DETAILS)., ANDERSON INDUSTRIES, INC. 2791 RESEARCH DRIVE ROCHESTER HILLS, MICHIGAN, 48309, Reel and Frame Number: 016206/01887 June 30, 2005 - MERGER (SEE DOCUMENT FOR DETAILS)., DURA OPERATING CORP. 2791 RESEARCH DRIVE ROCHESTER HILLS, MICHIGAN, 48309, Reel and Frame Number: 016206/02235 July 18, 2005 - SECURITY INTEREST (SEE DOCUMENT FOR DETAILS)., BANK OF AMERICA, N.A., AS COLLATERAL AGENT 20800 SWENSON DRIVE WAUKEEWA, WISCONSIN, 53187, Reel and Frame Number: 016283/00560 August 9, 2005 - SECURITY AGREEMENT, WILMINGTON TRUST COMPANY, AS COLLATERAL AGENT RODNEY SQUARE NORTH WILMINGTON DELAWARE 19890, Reel and Frame Number: 016369/00695 August 28, 2007 - SECURITY AGREEMENT, MERRILL LYNCH CAPITAL, A DIVISION OF MERRILL LYNCH BUSINESS FINANCIAL SERVICES, INC. 222 NORTH LASALLE STREET CHICAGO ILLINOIS 60601, Reel and Frame Number: 019754/02247 February 8, 2008 - TERMINATION AND RELEASE, DURA OPERATING CORP. 2791 RESEARCH DRIVE ROCHESTER HILLS MICHIGAN 48309-33535, Reel and Frame Number: 020478/00674

CORE TERMS: sensor, electrode, membrane, conductive, gas, protonic, proton, conductor, sensing, electrical ...

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

56500514

July 22, 1997

Low cost room temperature electrochemical carbon monoxide  
and toxic gas sensor with humidity compensation based on  
protonic conductive membranes

REEXAMINATION: January 29, 2002 - Reexamination requested Jan. 29, 2002 by  
Figaro Engineering, Osaka, Japan, c/o Arent, Fox, Plotkin & Kahn, Attn: Robert  
B. Murray, Washington, DC, Reexamination No. 90/006,209 (O.G. Apr. 29, 2002) Ex.  
Gp.: 1743

REISSUE: July 17, 2003 - Reissue Application filed Ex. Gp.: 1753; Re. S.N.  
10/621,6637 (O.G. November 11, 2003)

CERT-CORRECTION: October 27, 1998 - a Certificate of Correction was issued for  
this patent

APPL-NG: 522946 (08)

FILED-DATE: September 1, 1995

GRANTED-DATE: July 22, 1997

CORE TERMS: sensor, electrode, membrane, conductive, gas, protonic, proton,  
conductor, sensing, electrical ...

56500254 OR 5,650,0254

Your search request has found no ITEMS.

To edit the above request, use the arrow keys. Be sure to move the cursor to the end of the request before you enter it.

To enter a new search request, type it and press the ENTER key.

What you enter will be Search Level 1.

For further explanation, press the H key (for HELP) and then the ENTER key.

5650054 OR 5,650,054

Your search request has found no CASES.

To edit the above request, use the arrow keys. Be sure to move the cursor to the end of the request before you enter it.

To enter a new search request, type it and press the ENTER key.

What you enter will be Search Level 1.

For further explanation, press the H key (for HELP) and then the ENTER key.

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